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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/735,119	12/11/2003	Stephen M. Dershem	QUANT1350-1 (028248-2302)	1929

7590 12/19/2006

Steven C. Bauman
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EXAMINER	
SANDERS, KRIELLION ANTIONETTE	
ART UNIT	**PAPER NUMBER**
1714	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	12/19/2006	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

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Office Action Summary	Application No.	Applicant(s)	
	10/735,119	DERSHEM ET AL.	
	Examiner	Art Unit	
	Kriellion A. Sanders	1714 .	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 36-48 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 36-48 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

The finality of the previous rejection is withdrawn.

Claim Rejections - 35 USC § 103

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 103 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claim 36 is rejected under 35 U.S.C. 103(a), as being unpatentable over Ishida et al, US Patent No. 6,207,786.

3. The patented disclosure teaches an adhesive comprising a benzoxazine in liquid form. The epoxy into which the benzoxazine is mixed is liquid and thermosetting. A cure initiator is also used. See col. 7, line 28 through col. col. 8, line 19 and claims 1-16.

4. Applicant argues that the present claims exclude the required phenolic of Ishida et al. Applicant is advised that claim 36 is directed to thermosetting resin composition consisting essentially of a benzoxazine, thermoset compounds including epoxy and other thermoset compounds and a cure initiator. Ishida indicates that the patented adhesives are useful wherein their easily modified coefficient of expansion would be of value. They are also said to be useful in composites such as circuit boards. See col. 8, lines 9-19, claims 1 and 2.

Response to Arguments

1. Applicant's arguments filed 12/01/06 have been fully considered but they are not persuasive.

5. Applicant's claim 36 remains obvious over Ishida et al because the present claim terminology that has been presented to exclude thermoset phenolic compounds of Ishida et al. raises new issues concerning the patentability of the claims. The amendment to the claims has not been found to be persuasive of the patentability of the present invention for two reasons.

6. The first reason is that there is no instance in applicant's specifications wherein the thermosetting phenolics of Ishida are excluded. Applicant's attention is directed to pages 12 and 13, paragraph [0040]. Applicant uses the phrase, "and the like" which would suggest that other thermosetting compounds not specifically set forth therein could be used in the invention. Additionally, it is well known that the omission of a component and its concurrent function is not invention. Ishida employs the phenolics in a lower amount than the other components due to its ability to act as a catalyst for the benzoxazine polymerization and as a hardener for the epoxy reactant. When the phenolic resin is used in a larger amount, e.g. above 10 weight percent of the blend, it can function both as a part of the matrix and as catalyst and/or hardener. A more preferred range for the phenolic resin or molecule would be from about 1, 2, 3, 5, or 20 to about 50 or 60 weight percent of the blend. The phenolic resin or molecule functions as a catalyst lowering the polymerization temperature of the benzoxazine monomer, functions as a hardener for the epoxy resin, and can serve as an additional matrix resin.

7. Applicant would have to show that though omitting the phenolic of Ishida et al, he is retaining its function as both a component of the matrix and as a catalyst and/or hardener.

8. Ishida further indicates that the blend of the three above components can be formulated with a variety of other components to achieve utility for specific applications. The blend is desirable due to its high Tg, good thermal stability, low melt viscosity, ability to be filled with fillers, good adhesion etc.

9. Applicant would have to show that though omitting the phenolic of Ishida et al, he is retaining high Tg, good thermal stability, low melt viscosity, ability to be filled with fillers, good adhesion etc.

10. The blends of Ishida are particularly applicable in electronics as an underfilling. Underfilling is a plastic molding compound that goes into a gap between an integrated circuit or die and the substrate. It mechanically couples the circuit or die to the substrate. It decreases residual stress and thermal fatigue in solder joints between the circuit or die and the substrate.

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

12. Claims 36-47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishida et al, US Patent No. 6,207,786 as applied to claim 36 above and further in view of Davis et al, US Patent No. 6,906,120 and further in view of Dershem et al., US Patent Nos. 6,034,194 or 6,034,195.

13. Davis discloses an adhesive composition of benzoxazine, a thermoset compound such as those including epoxy and phenolics, bis-maleimide and cyanate ester, a cure promoter and

optional adjuvants. Patentee also discloses the use of the compositions as an adhesive for metal substrates including copper. Applicant's claimed composition and method are considered obvious over the combined disclosures of the references, which suggest each parameter of applicant's process steps. The ordinary practitioner would be knowledgeable as to which substrates are electrically or thermally conductive, particularly in the manufacture of circuit boards or other electronic parts. Davis discloses circuit boards. See col. 2, lines 36-54 and col. 9, line 43 through col. 11, line 5.

Dershem et al. indicates specifically that maleimides of the disclosed formulae are suitable for making adhesive compositions with high flexibility and low moisture uptake. It would have been obvious to one of ordinary skill in the art to employ the maleimides of Dersham et al. '194 or '195 as those polyimides suggested by Davis et al. for formulating adhesive compositions.

1. Applicant's arguments filed 6/16/06 have been fully considered but they are not persuasive. In regards to the rejections under 35 USC 102, applicant argues that Ishida et al requires the use of a phenolic resin not required by applicant and that Davis requires the use of poly(arylene ether) resin not required by applicant. These arguments have not been found to be persuasive in that there is no instance in applicant's specifications wherein the poly(arylene ether of Davis are excluded. Applicant's attention is directed to pages 12 and 13, paragraph [0040]. Applicant uses the phrase, "and the like" which would suggest that other thermosetting compounds not specifically set forth therein could be used in the invention. Additionally, it is well known that the omission of a component and its concurrent function is not invention. Applicant has not shown that he has omitted the poly(arylene ether) of Davis while at the same

time retained the excellent properties in solder resistance, solvent resistance, moisture resistance and flame retardancy that Davis et al has achieved. In the absence of such a showing, the claims are considered obvious.

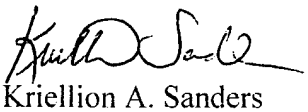
2. Applicant further avers that the patented inventions do not include a limitation that suggests that the materials that are adhered together have different coefficients of thermal expansion. However, because the patented and presently claimed inventions possess the same components, a property such as coefficient of thermal expansion for those components is considered to be inherent to the components because a component and its properties cannot be separated.

3. Again, applicant has pointed out where he finds the Dersham references to be deficient. In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kriellion A. Sanders whose telephone number is 571-272-1122. The examiner can normally be reached on Monday through Thursday 8:30-7:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on 571-272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Kriellion A. Sanders
Primary Examiner
Art Unit 1714

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